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The Effectiveness of Writing Portfolios to Develop Metacognition

Beth Bleeker

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Abstract

This action research study investigated the effectiveness of using writing portfolios to develop metacognitive skills. The participants in this study were twelve Grade 9 students from a school in West Michigan. Students were asked to compile a writing portfolio over the course of eight weeks. Students completed a questionnaire and interview before and after compiling their portfolios. The data from the pre and post questionnaire and interview was then compared to determine if there was a significant increase in metacognitive skills after students had completed their portfolios. The results of this study show writing portfolios have a positive impact on metacognitive skill awareness and development.

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Action Research Report Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Education

The Effectiveness of Writing Portfolios to Develop Metacognition

By

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Action Research Report
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Abstract

This action research study investigated the effectiveness of using writing portfolios to develop metacognitive skills. The participants in this study were twelve Grade 9 students from a school in West Michigan. Students were asked to compile a writing portfolio over the course of eight weeks. Students completed a questionnaire and interview before and after compiling their portfolios. The data from the pre and post questionnaire and interview was then compared to determine if there was a significant increase in metacognitive skills after students had completed their portfolios. The results of this study show writing portfolios have a positive impact on metacognitive skill awareness and development.

Keywords: Metacognition, writing portfolio,

Students often enter the language arts classroom with a fixed mindset about their writing abilities. They have written countless papers in previous years and often dread another composition class. Research studies have shown that there is a "relationship between students' attitudes towards writing, writing self-efficacy and writing achievement" (Bulut, 2017, p. 282). When students enter the language arts classroom with a negative attitude, they are less likely to be highly motivated to write or achieve proficient levels of writing. Much research has been completed on the correlation between motivation and performance and personal reflection (Balta, 2018; Bulut, 2017). One of the major findings is that "the student's self-evaluation of his/her learning process helps to protect self-efficacy and motivation" (Bulut, 2017, p. 282). Without developing the student's positive writing mindset, much of the instruction becomes futile.

Developing a student's positive mindset is just as important as developing understanding of academic skills and concepts (Bulut, 2017). Metacognition is one way to develop a student's understanding of their learning process. It is not enough that students understand what writing is and how to be a good writer. They must understand who they are as a writer, where their strengths and weaknesses lie, and how they can grow as a writer (Balta, 2018).

During a student's high school years, teachers can work extensively to develop the students' mindsets and writing abilities. A study from Carnegie Mellon University (2021) noted that college students are often unprepared to write in the college setting. In fact, the Chronicle of Higher Education (2006) reported that 61% of high school teachers have never required their students to write a paper longer than five pages in length. Similarly, George Washington University (2007) published a study that stated:

> first-year undergraduates... students were rarely required to criticize an argument, define a problem and propose a solution, shape their writing to meet their readers' needs, or

> revise based on feedback. One of the main reasons that students are unprepared for college level writing is that they often "lack the metacognitive skills to recognize the areas in which their prior knowledge and skills are insufficient – and thus which skills they need to work to improve. (para. 3)

One way to develop metacognitive skills is through the use of portfolios, and, according to Rolheiser, Bower, and Stevahn (2000), the use of writing portfolios has increased in the last decade. The portfolio "can be used as an alternative to high-stakes assessment, can support writing instruction, and student learning" (Lam, 2016, p. 1900). The main goal of a writing portfolio is "to get students to reflect on their work, motivating them to take ownership of their learning and set future goals" (Rolheiser, Bower, & Stevahn, 2000).

The purpose of this study was to determine the effectiveness of using writing portfolios to develop metacognitive skills in high school students. To address this purpose, the following research question was explored.

Research Question

1. Does the use of writing portfolios develop metacognitive skills in high school students?

Definition of Terms

For this study, the following definitions of key terms have been used. The definitions are the work of the researcher, unless otherwise noted.

Assessment for Learning**:** Cambridge Assessment (2022) defines assessment for learning as "essential teaching strategies during learning to help teachers and students evaluate progress in terms of understanding and skills acquisition, providing guidance and feedback for subsequent teaching and learning" (p. 9).

Metacognition: Vanderbilt's Center for Teaching (2022) defines metacognition as "processes used to plan, monitor, and assess one's understanding and performance" (para. 1). Additionally, Cambridge Assessment (2022) defines metacognition as "'thinking about thinking'. It refers to the processes used to plan, monitor and assess one's understanding and performance. Metacognition includes a critical awareness of a) one's thinking and learning and b) oneself as a thinker and learner" (p. 9).

Metacognitive Skills: "specific skills such as monitoring understanding, identifying breakdown of comprehension, identifying strategies that improve understanding, adjusting pace of learning, maintaining a proper attitude, and creating a check-in system are referenced. (University of Waterloo, 2021, para. 2).

Motivation: Motivation is the "internal state or condition that activates behavior and gives it direction; desire or want that energizes and directs goal-oriented behavior; influence of needs and desires on the intensity and direction of behavior (Huitt, 2011, para. 1).

Reflection: "the discernment of the relation between what we try to do and what happens in consequence" (Bowman et al., p. 2016, p. 1).

Self-Efficacy**:** Self-efficacy, according to the Carey and Forsyth (2009), "refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments" (para. 1)

Self-Evaluation: Davis (2021) defines self-evaluation as "a mental process you can use to grow your understanding of who you are, what your values are, and why you think, feel, and act the way you do" (para. 3).

Writing Portfolio: Pulsen, Pulsen, and Meyer (1991) define a portfolio as "a purposeful collection of student work that exhibits the student's efforts, progress, and achievements in one

or more areas" (para. 1). The specific writing portfolios referred to in this study were completed in a composition class and consist of several writing samples from students.

Literature Review

Writing well is often a challenge for many high school students; because they believe they lack the competency to write well, they often struggle with motivation (Bulut, 2017). "Although it is a cognitive process, writing competency is associated with motivation. The low writing motivation is sourced from low writing self-efficacy, low self-regulation, and high writing anxiety" (Balta, 2018, p. 234). One method of improving motivation in struggling writers in is by developing metacognitive skills (Belgrade, 2013). Metacognition "occurs when students are regularly encouraged to make judgments about their achievements, reflect on these judgments, and then communicate what they have learned" (Belgrade, 2013, p. 337). Writing instruction lends itself to developing students' metacognitive skills (Balta, 2018, Chanski, 2015).

Developing metacognitive skills is the responsibility of classroom teachers. What the teacher communicates about writing proficiency is important. Chanski (2015) stated that much writing assessment is based on the final product, but this often communicates to students that their writing process is not as important as their completed work. Assessment of writing must take into consideration the process of writing not just the product. Students must be made aware of how important the writing process is for their metacognitive development.

Metacognition and reflection have become more prevalent areas of interest in education communities in recent years (Balta, 2018; Bowman, et. al., 2016; Taczak & Robertson, 2017). Skilled writers utilize metacognition throughout the writing process. The metacognitive process consists of three different types of knowledge: "declarative knowledge, the knowledge about what to do; procedural knowledge, the knowledge of how to do something; and conditional

knowledge, knowledge about when to use a procedure" (Balta, 2018, p. 234). Each of these aspects of knowledge must be considered in instructional design so that students will develop well-rounded metacognitive practices. Balta (2018) also stated, "One of the biggest mistakes in education is to focus on what students think rather than how they think." Developing metacognitive skills can be beneficial for students of all ages. Reflection on how a student thinks is now part of the curriculum for thousands of schools around the country (Taczak & Robertson, 2017).

Assessment as learning, as in the use of writing portfolios, can "integrate teaching and learning, especially when teachers use appropriate feedback information to improve student writing and to further improve instruction" (Lam, 2016, p. 1906). In more recent years, educators have come to agree that portfolios are an acceptable way to develop writing skills and provide products that can be assessed (Lam, 2016). The combined use of portfolios and metacognitive skills can achieve the goal of improving both writing skills and student motivation. Bowman, et. al. (2016) completed a study on the use of ePortfolios in developing metacognitive practices. The research found:

> For over a decade, the use of ePortfolios have been promoted in higher education to support student learning, serving as both a product of academic coursework and as a process that supports metacognitive thinking. Specifically, the act of reflection...can facilitate the active process of retrieving knowledge in order to apply it to a novel situation and increase a students' ability to reach higher order thinking skills… (Bowman et al., 2016, p. 2)

Bowerman's (2016) study included data from 19 college faculty over the course of a semester. About half of the faculty utilized a portfolio approach to assessment, while the others maintained

a traditional assessment. Each of the students completed a reflection as part of their portfolio. Each reflection was scored on a rubric and that data was then compared between the two groups of students. This study showed significant correlation between the use of a portfolio and the development of metacognitive skills. Several of the instructors found the portfolio format to be more conducive to allowing students to reflect on their writing process.

Farabian and Azarzamini's (2018) study on writing portfolios researched the impact of portfolios on EFL learners' metacognitive and writing performance. This study sought to identify the role of portfolios in EFL writers by utilizing a metacognitive writing questionnaire as well as a student attitude questionnaire. Farabian and Azarzamani (2018) studied 69 undergraduate TEFL students with varying abilities in the English language. Students were split into a control and experimental group and were given the same writing task. Students in the experimental group were asked to engage in several different reflective practices throughout the building of their portfolios. The findings of this research showed that portfolios "significantly contribute to empowering both the metacognitive and writing proficiency of EFL learners" (p. 2).

Limited studies have been conducted on the use of writing portfolios in a general education classroom. A few studies have been completed with EFL students and have shown portfolios to be an effective way to develop metacognitive skills in these students (Abhakorn, 2014; Farahian & Avarzamani, 2018.) "It was found that learners' personal and strategic knowledge improved considerable through the portfolio treatment" (Farahian & Avarzamani, 2018, p. 12). Abhakorn (2014) also completed a study investigating the use of student portfolios to develop students' metacognition in English as a Foreign Language Learning. One of his conclusions was that using metacognitive practices with writing portfolios can easily become too much and feel forced. With his learners, he felt that these practices would have been better suited

for more “mature learners” (Abhakorn, 2014, p. 52). Mature learners could be understood as those who have a better command of the English language.

To understand students’ command of metacognition, instructors need tools to measure metacognitive skills. There are several tools that can be used in the classroom to both measure and develop students’ metacognitive skills. Farahain and Avarzamani (2018) utilized a metacognitive writing questionnaire in their study to collect data on their students' understanding and command of metacognitive skills. This questionnaire was given at the beginning of the study and then again at the end. The data was collected and compared to show growth in metacognitive skill. Farahain and Avarzamani (2018) also utilized student reflective sheets. These allowed students to reflect on their learning throughout the process of developing their portfolios. These reflective sheets allowed students to “have a chance to write about their writing experiences in order to reflect more deeply on the process of their writing development and progress” (Farahian & Avarzamani, 2018, p. 6). Chanski (2015) cited that writing logs, interviews, self-grading exercises, reflections, and rubrics were all helpful instruments.

Research on the effectiveness of writing portfolios and the awareness of metacognitive skills may be linked together to determine if a combined approach to writing portfolios and metacognitive skills is an effective approach to writing instruction.

Methods

Participants

This study was conducted with a group of grade 9 students from a private, Christian school in the Midwest. These students range from 14 to 15 years of age. This group of 12 students make up the 9th grade Language Arts class for this school. All the students from this class were included in the study. All students are Caucasian and are from middle class families.

These students are representative of the school as a whole. Most of the students in this school are from conservative, middle class families.

Materials

This study utilized a metacognitive awareness questionnaire which was adapted from Farahian's (2015) study on writing metacognitive awareness in EFL students. Adaptations were made to the questionnaire because many of the question in the original study were designed for EFL learners. The questionnaire utilized a Likert scale 1-5 rating where students rated to what extent they agreed or disagreed with each statement (See Appendix A).

Students completed the questionnaire in a Google Form. This allowed the data to be exported into a spreadsheet to be analyzed. The students' names were collected only to ensure all students had completed the questionnaire. These names were not included in the reports of the results. These results were compared with the post-questionnaire results where patterns of growth were sought.

This questionnaire was piloted with a group of grade 10 composition students. The students gave feedback that allowed the questionnaire questions to be clarified. The median score for the pilot of the questionnaire was 163.57. While this was not an accurate representation of pre- or post- test data, it is a reference point for the future results.

Students also completed a cognition interview, adapted from Farahain's (2015) study, before as well as after completing their writing portfolios (See Appendix B). The questions in this interview allowed students to expound on their understanding of metacognitive skills. The questions focused on knowledge of cognition and regulation of cognition. Students were able to explain their understanding of the writing process. This qualitative aspect of the research study

provided additional information outside of the quantitative metacognitive awareness questionnaire.

Design

This study is a mixed-methods study that explored the relationship between the use of writing portfolios and the development of metacognitive skills. All students participated in the writing portfolio process and all students completed the same metacognitive awareness questionnaire and cognition interview both before and after the writing portfolio exercises.

Procedure

The students who participated in this study had not engaged in any writing activities this school year. At the beginning of the study, the students completed the metacognitive awareness questionnaire (See Appendix A). Students also completed a cognition interview (See Appendix B). For the next eight weeks, students engaged in writing activities, and with each writing activity, students engaged in practice with a metacognitive skill. Students were able to practice each skill throughout the process of building their writing portfolios. After the students completed their writing portfolios, they again completed the metacognitive awareness questionnaire (See Appendix A). The same questions appeared on this questionnaire and appeared in the same format. The cognition interview was completed again at the end of the eight weeks. The results from the cognition interview were organized in a spreadsheet that compared the first and second sets of responses for each student. The questions from the cognition interview were separated out by categories that aligned with those used in the metacognitive awareness questionnaire.

Results

The purpose of this study was to determine if the use of writing portfolios had an impact on the metacognitive skills of the student. A metacognitive awareness questionnaire was administered before and after compiling the writing portfolio to measure the growth of students' metacognitive skills. Table 1 shows the composite scores from the first and second metacognitive awareness questionnaire as well as the difference in the composite score for each student.

Quantitative Data

Table 1

Individual Student Composite Data from Metacognitive Awareness Questionnaire

	Initial Metacognitive Awareness Questionnaire Composite Score	Final Metacognitive Awareness Questionnaire Composite Score	Difference in Composite
Student 1	126	199	73
Student 2	109	168	59
Student 3	143	138	-5
Student 4	157	178	21
Student 5	152	182	30
Student 6	123	149	26
Student 7	105	132	27
Student 8	137	166	29
Student 9	138	137	-1
Student 10	108	144	36
Student 11	98	106	8
Student 12	106	110	4

All but two of the twelve students showed growth in their composite scores. The growth in composite scores ranged from -5 to 73. Table 2 shows a comparison of the average of the composite scores in the initial and final questionnaire scores.

Table 2

Class Composite Data

Initial Questionnaire Mean Composite	125.1667
Final Questionnaire Mean Composite	150.75
p-value	0.0029

The results of the student data showed a 25.58 growth in average composite score between the initial and final metacognitive awareness questionnaire. The p-value for this data was calculated to be 0.0029, which is very statistically significant.

The questionnaire was broken down into three categories: knowledge and understanding of writing strategies, preparing for writing, and reflection during the writing process.

Knowledge & Understanding of Writing Strategies

Table 3

Questionnaire Questions Relating to Knowledge & Understanding of Writing Strategies

Questionnaire Questions Relating to Knowledge & Understanding of Writing Strategies
I find myself applying writing strategies with little difficulty.
I know when to use a writing strategy.
I know which strategy best serves the purpose I have in my mind.
I know what to do when the strategies I employ are not effective.

Table 3 presents the questions from the metacognitive awareness questionnaire relating to the knowledge and understanding of writing strategies. Students were asked to rate themselves on a Likert scale, 1 being “strongly disagree” and 5 being “strongly agree.” The mean and standard

deviation scores of both initial and final questionnaire responses for these questions were calculated and are shown in Table 4.

Table 4

Knowledge & Understanding of Writing Strategies Data

	Initial Questionnaire		Final Questionnaire			
Likert Scale from (1 - Strongly Disagree) to 5 (Strongly Agree)	*M*	*SD*	*M*	*SD*	T-Stat	P-Value
I find myself applying writing strategies with little difficulty.	2.25	2.20455	3.15	0.93182	-2.031	0.0336
I know wghen to use a writing strategy	2.00	1.27273	3.00	1.09091	-2.872	0.0076
I know which strategy best serves the purpose I have in my mind	2.33	1.33333	3.17	1.60606	-2.057	0.0321
I know what to do when the strategies I employ are not effective	2.00	1.45455	2.83	1.42424	-1.7578	0.05326

Table 4 shows the calculated mean of the initial and final questionnaire responses for the questions on knowledge and understanding of writing strategies. The initial questionnaire means ranged from 2 to 2.33. The final questionnaire mean ranged from 2.83 to 3.17. The standard deviation for the initial questionnaire ranged from 1.27273 to 2.20455. This means there was a large range in the scores from the initial questionnaire. The standard deviation from the final questionnaire ranged from 0.93182 to 1.60606 meaning there was still a large range in the responses, but a smaller range than in the initial questionnaire. Overall, the students scored themselves higher in the final questionnaire which shows growth. The p-values for each set of data, except the last question from this section, was calculated to be less than .05 which means the data is considered statistically significant. The data from the last question is not statically significant. Two students did not show growth in this section of the survey. Both students scored the same mean on the initial and final questionnaire for this section.

Preparing for Writing

Table 5

Questionnaire Questions Relating to Preparing for Writing

Questionnaire Questions Relating to Preparing for Writing
Before I start writing, I prepare an outline.
I make necessary modifications in my plan while writing.
I make a draft before writing.

Table 5 shows the questions from the metacognitive awareness questionnaire that relate to preparing for writing. Students were asked to rate themselves on a Likert scale, 1 being "strongly disagree" and 5 being "strongly agree." The mean and standard deviation scores of both initial and final questionnaire responses for these questions were calculated and are shown in Table 6.

Table 6

Preparing for Writing Scores

	Initial Questionnaire		Final Questionnaire			
Likert Scale from (1 - Strongly Disagree) to 5 (Strongly Agree)	*M*	*SD*	*M*	*SD*	T-Stat	P-Value
Before I start Writing, I prepare an outline	1.58	0.62879	3.75	1.84091	-5.9225	0.000049
I make necessary modifications in my plan while writing	2.50	0.81818	3.25	1.47727	-1.7498	0.053978
I make a draft before writing	2.08	1.71970	3.42	1.53788	-4.0000	0.001043

Table 6 shows the calculated mean score of the initial and final questionnaire to the questions relating to preparing for writing. The initial questionnaire mean ranged from 1.58 to 2.5. The final questionnaire mean ranged from 3.25 to 3.75. The standard deviation for the initial questionnaire ranged from 0.62879 to 1.7197. The standard deviation for the final questionnaire

ranged from 1.47727 to 1.84091. Examining the standard deviation reveals that the final questionnaire showed much more of a range in response than the initial questionnaire. All but one student showed growth in this section of the questionnaire. The p-value for the data sets was calculated and the value for the first and last question for this section were calculated to be less than .05. The p-value for the second question was calculated to be 0.053978 which is not considered statistically significant. The one student who did not show growth had the same calculated mean on both the initial and final questionnaire.

Reflection During the Writing Process

Table 7

Questionnaire Questions Relating to Reflection During the Writing Process

Questionnaire Questions Relating to Reflection During the Writing Process
I pause while writing and ask myself if the message is clear.
I ask myself if the content matches the outline I have already developed.
I mainly focus on conveying the main message rather than the details.
If I do revision, I do it at the textual features of the text (e.g. vocabulary, grammar, spelling).
I can effectively manage the time allocated to writing.
I have control over my attention and do not easily let myself sidetracked.

Table 7 shows the questions on the questionnaire relating to reflection during the writing process. Students were asked to rate themselves on a Likert scale, 1 being “strongly disagree” and 5 being “strongly agree.” The mean and standard deviation scores of both the initial and final questionnaire responses for these questions were calculated and are shown in Table 8 below.

Table 8

Reflection During the Writing Process Scores

	Initial Questionnaire		Final Questionnaire			
Likert Scale from (1 - Strongly Disagree) to 5 (Strongly Agree)	*M*	*SD*	*M*	*SD*	T-Stat	P-Value
I pause while writing and ask myself if the message is clear	2.50	2.45455	3.33	1.51515	-1.8202	0.048007
I ask myself if the content matches the outline I have already developed	2.00	1.45455	3.42	1.53788	-2.6091	0.012149
I mainly focus on conveying the main message rather than the details	2.92	0.99242	4.08	1.17424	-2.7553	0.009357
If I do revision, I do it at the textual feature of the text.	2.92	1.53788	4.00	0.90909	-3.7671	0.001558
I can effectively manage the time allocated to writing.	2.83	2.15152	3.42	1.53788	-1.6295	0.065744
I have control over my attention and do not easily let myself sidetracked.	2.50	2.63636	2.92	1.90152	-0.8610	0.203819

Table 8 shows the calculated mean scores of the initial and final questionnaire responses to reflection during the writing process. The initial questionnaire mean ranged from 2 to 2.92. The final questionnaire mean ranged from 2.92 to 4.08. The standard deviation for the initial questionnaire ranged from 0.99242 to 2.63636 which shows the responses had a very large range. Some students rated themselves quiet high, while others rated themselves low. The standard deviation for the final questionnaire had a smaller range, from 0.90909 to 1.9.0152. The p-values for the first four questions from this section were all less than 0.05, making this data statistically significant. All but one student showed growth in this section. The student whose score declined showed a -0.33 change.

Qualitative Data

When analyzing the interview responses, specific words or phrases were coded. A combination of quantitative and qualitative analysis was completed using the coding process. Within each student's responses, the change between the first and second responses was coded as either a positive or negative change. During the second round of coding, a deductive approach was used. Responses were coded into categories using descriptive coding.

Knowledge and Understanding of Writing Strategies

The responses from the questions related to knowledge and understanding of writing strategies were coded by if the student mentioned specific strategies and if so, how many. Table 9 illustrates those results.

Table 9

Qualitive Results of Knowledge and Understanding of Writing Strategies

	Number of Responses Mentioning Specific Strategies Mentioned	How Many Strategies Mentioned (on average)
Initial Interview	2	1
Final Interview	7	3.5
p-value		0.3228

In the initial interview, only two students' responses mentioned specific strategies. Each of these students only mentioned one strategy in their response. In the final interview, seven students' responses mentioned specific strategies. On average, these responses included 3.5 specific strategies. The p-value for this data was calculated to 0.3228, which is not considered statistically significant.

Preparing for Writing

The responses from the questions related to preparing for writing were coded by either a "yes" or "no" response to the first question. If the student responded "yes" to the first question, the answer to the next question was coded based on what steps, and how many, were included in their plan for writing. Table 10 illustrates those results.

Table 10

Qualitative Results of Preparing for Writing

	Number of "Yes" Responses	How Many Steps Mentioned (on average)
Initial Interview	4	1
Final Interview	10	3.5
p-value		0.357

In the initial interview, four students responded yes to the question asking, "do you know how to begin, proceed, and conclude the writing task?" When asked what specific steps are taken during the writing process, on average only one step was mentioned in the responses. In the final interview, 10 students responded "yes" to the first question. In the question following, an average of 3.5 steps were mentioned throughout the responses. The p-value for this set of data was calculated to be 0.357 which is not considered statistically significant.

Reflection During the Writing Process

The final section of interview responses on reflection during writing was coded based on if students included specific strategies for reflection and if so, how many strategies were included. After this round of coding was completed, the initial and final interview responses were compared to determine a change in responses over the time of the study. Table 11 reflects these results.

Table 11

Qualitative Results of Reflection During the Writing Process

	Number of "Yes" Responses	Number of Responses with Specific Practices Mentioned	Number of Responses with Application of Practices
Initial Interview	4	2	0
Final Interview	9	5	5
p-value			0.2487

In the initial interview, four students responded with a "yes" answer to the question "do you revise your writing when you are finished?" In the final interview, this number increased to nine students. Students were also asked what revision practices they used and in the initial interview, only two specific practices were mentioned, and none of the responses gave additional details about how the practices were applied. In the final interview, five responses included specific practices and each of those responses included details on how the practices were applied in the students' personal writing. The p-value for this data was calculated to be 0.2387 which is not considered to be statistically significant.

Discussion

Overview of the Study

The purpose of this study was to determine if the use of writing portfolios has an effect on students' metacognitive skills. This study was conducted with twelve students from a 9th grade composition class. The initial metacognitive awareness questionnaire was given at the beginning of their writing portfolio project and the same questionnaire was completed after their writing portfolios had been completed. Students were also asked interview questions that gave additional insight into their understanding of writing strategies, preparing for writing, and

reflections during the writing process. The questionnaire results and interview comments were compiled and analyzed to determine if the writing portfolios and/or student attitudes had an effect on the students' metacognitive skills.

Summary of Findings

The metacognitive awareness questionnaire was conducted prior to the start of the writing portfolio process and again at the end of the process. Table 1 shows the composite results of each of the students in the initial and final questionnaire. Overall, ten out of the 12 students showed growth. The two students who did not show growth had minor differences in their composite scores. The difference of composite scores ranged from -5 to 73 points. When the average composite scores of the initial and final questionnaire were compared, there was an average of a 25.58 growth. The p-value for this data was calculated to be 0.0029 which is considered very statistically significant. This data shows that the writing portfolio process had a positive impact on the metacognitive skills of the students.

Knowledge and Understanding of Writing Strategies

One of the aspects of metacognition that was studied was the knowledge of and understanding of writing strategies. The initial questionnaire mean ranged from 2 to 2.5 The final questionnaire mean ranged from 2.83 to 3.15. This data shows that, overall, the students did grow in their knowledge and understanding of writing strategies. Two students did not show growth in this section of the survey. Both of these students scored the same mean on the initial and final questionnaire for this section. A recurring theme in the interview responses was that students were not aware of strategies before starting their writing portfolios. Seven of the twelve students' responses demonstrated a knowledge of a variety of writing strategies in the final interview. While not all the students showed awareness of writing strategies, some of the

students were much more aware of what strategies are available to use. For example, a student responded to the question asking about awareness of strategies and how they are used with: “not really, I just write the paper and hope it’s good” in her pre-interview (Student 5 Interview, 01-20-2022). Her response to the same question in the post-interview was: “[strategies] help plan how the writing is going to go. Outlines are very helpful as well as the planning templates we have used” (Student 5 Interview, 03-11-2022).

Preparing for Writing

Another aspect of metacognition that was studied was preparing for the writing process. The initial questionnaire mean ranged from 1.58 to 2.50. The final questionnaire mean ranged from 3.25 to 3.75. As a class, this data shows there was growth overall in their understanding of how to prepare for writing. All but one student showed growth in this section of the questionnaire. The cognition interview revealed that a specific area of writing that students struggled with prior to this study was planning for their writing tasks. In the initial interview, only four students responded that they knew how to begin, proceed, and conclude the writing task. In the final interview, this number increased to 10. For example, a student’s response to the question about what they do first when they write and if they make a plan in the initial interview was, “no, I just get to the paper and start writing” (Student 8 Interview, 01-20-2022). Her post-interview response to the same question was, “I usually make an outline of the topics and facts that I want to include in my paper” (Student 8 Interview, 03-11-2022).

Reflections During the Writing Process

The last aspect of metacognition studied was reflections during the writing process. The initial questionnaire mean ranged from 2.00 to 2.92. The final questionnaire mean ranged from 2.92 to 4.08. All but one student showed growth in this section. The student whose score

declined showed a -0.33 change. One supposition for a decrease in score could have been the awareness of reflection. Because students had been engaged in reflection activities while writing, they began to become aware of what it meant to reflect while writing. This could have affected their responses to these questions. In the initial cognition interview most students had vague answers about their reflection practices. In the final interview responses, several students referenced specific ways they reflect throughout the writing process. There was a significant growth in confidence in their answers in the final interview. While there was not necessarily growth in the number and types of strategies used while writing, students seemed much more confident in their understanding of what happens during the writing process and how to improve their writing.

The findings of this study were aligned with other research. The level of growth was similar to that reported in both Farahian & Avarzamani's (2108) and Abhakorn's (2014) studies with EFL students who noted that the use of writing portfolios brings awareness to students' metacognitive practices and improves their use of these skills.

Recommendations

This researcher recommends that the students continue the writing portfolio process in the future. The act of writing and reflecting on writing will continue to improve the students' understanding of their writing skills. One specific recommendation is to introduce metacognition and related vocabulary words to students during the writing process. Students are often so unaware of what they are thinking about while writing that they do not realize the metacognitive skills they are utilizing. The students in this study were confused by some of the terms in the initial questionnaire and cognition interview. After a brief explanation, students were able to

understand what was being asked and many of them realized they did understand the concept, just lacked the terminology.

For further study of this topic, a more diverse student population may present different or more detailed results. This research could also be completed over a much longer time frame to see a more accurate representation of long-term effects of the writing portfolio.

Limitations

One limitation of this study is the sample size as it was conducted using a class of only twelve students. They were all from the same school and were not randomly selected. There was no other group that was used as a control group, so only the pre- and post-questionnaire data could be compared. Another limitation to this study is that all students were in the same class with the same teacher. Students were not exposed to a variety of teaching style or methods. All the students are students of the researcher, which could have an impact on the responses they gave to the questionnaire and interview questions. These students all come from a similar background, so there was not a variety of backgrounds and ethnicities represented in the student sample. These limitations could have had an impact on the data collected. A larger, more diverse sample may have given a more accurate representation of the data.

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Appendix A

Metacognitive Awareness Questionnaire

1. I think writing is more difficult than reading, speaking, or listening.
2. Topic familiarity has a significant effect on one's writing output.
3. A skilful writer is familiar with writing strategies (e.g., planning or revising the text).
4. To improve my writing skill, I have to read a lot.
5. I believe that the more I practice writing, the more I improve my writing skill.
6. At every stage of writing, a skilful writer avoids making errors.
7. Dwelling on vocabulary items and grammar interferes with getting the message across.
8. I am aware of different types of genres in writing (e.g.,expository, descriptive, narrative).
9. I know that the necessary components of an essay are introduction, body, and conclusion.
10. I am familiar with cohesive ties (e.g., therefore, as a result, firstly).
11. I am good at writing topic sentences.
12. I know what to do at each stage of writing.
13. I find myself applying writing strategies with little difficulty.
14. I know how to develop an appropriate introduction, body, and conclusion for my essay.
15. I know when to use a strategy.
16. I know which strategy best serves the purpose I have in my mind.
17. I know what a coherent piece of writing is.
18. I know what to do when the strategies I employ are not effective.
19. I know which problem in writing needs much more attention than others.
20. Before I start to write, I prepare an outline.
21. I make necessary modifications in my plan while writing.

22. I set goals and subgoals before writing (e.g., to satisfy the teacher, to be able to write emails, to be a professional writer).
23. I make a draft before writing.
24. I pause while writing and ask myself if the message is clear.
25. I have a specific audience in mind.
26. While writing, I identify the mistakes I've made.
27. I ask myself if the content matches the outline I have already developed.
28. I find myself resorting to a fixed set of sentences I have in mind instead of creating novel sentences.
29. I can develop ideas creatively through using novel sentences.
30. At every stage of writing, I use my background knowledge to create the content.
31. When I get stuck, I can find ways to solve the problem.
32. I mainly focus on conveying the main message rather than the details.
33. I automatically concentrate on both the content and the language of the text.
34. I can effectively manage the time allocated to writing.
35. After I finish the essay, I check whether the content fits the original plan.
36. I use avoidance strategies (e.g., when I do not know a certain vocabulary item or structure I avoid it).
37. When I cannot write complicated sentences, I develop other simple ones.
38. I have control over my attention and do not easily let myself sidetracked.
39. When I do not understand something, I get help from others(e.g.,my classmates,the teacher)
40. While writing, I consult resources such as a dictionary or the Web to get help.

41. If my mind goes blank when I begin to write, I use other similar texts or resources to take hints.
42. After I finish writing, I edit the content of my paper.
43. If I do revision, I do it at the textual features of the text (e.g., vocabulary, grammar, spelling).

Appendix B

Cognition Interview

Knowledge of cognition

1. What is your general attitude toward writing? Do you think you are a good writer in English?
2. How do you feel when you are assigned a writing task? Do you enjoy it? Why (not)?
3. What kind of problems do you often encounter while writing in English? What is the main one? How do you deal with your problems?
4. Do you know how to begin, proceed, and conclude the writing task? Explain.
5. Are you aware of the strategies you use while writing? Do you have specific reasons for using them?
6. If you use specific strategies, when and why you use them? How do you apply strategies to your writing?

Regulation of cognition

1. What do you do first before you begin to write? Do you have any plan in your mind before beginning to write? Explain
2. Do you try to concentrate first on the overall idea, the audience, and the message before you begin to write?
3. What do you hope to accomplish with what you write? (Satisfy the teacher? Be able to write emails?) Do you set goals and subgoals before and while writing?
4. While writing in English, what do you do when you have a problem and get stuck? Do you consider several alternatives to solve the problem?

5. Do you often stop while writing and ask yourself how well you are doing? If yes, what do you do then?
6. What do you do when you finish writing? Do you know how well you have done when you finish the task?
7. Do you often revise your writing tasks?
8. Do you stop while writing and reread what you have written?
9. What do good writers do while writing?